

## CLAIMS

What is claimed is:

1. An improved wall construction for positioning a plurality of rigid, self-supporting panels to provide exterior walls and/or divide or partition interior building space,  
5 said panels having a substantially rectangular shape with an inner and outer face and a top edge, a bottom edge, a front edge and a rear edge, said wall construction comprising:  
a plurality of top rail members each having a substantially flat elongated rectangular shape with a first end and a second end and having a raised spine  
10 member spanning from first to second end, said rail members suitable for placement along the top of a wall line in end-to- end relative arrangement;  
a plurality of bottom rail members each having a substantially flat elongated rectangular shape with a first end and a second end and having a raised spine member spanning from first to second end, said rail members suitable for  
15 placement along the bottom of a wall line in end to end relative arrangement; and  
a plurality of vertically oriented flanged stud members each having a top end and a bottom end and a substantially hat-shaped cross section that includes a large flange and a small flange joined together by a spine channel located  
therebetween, said large flange, small flange, and spine channel each having a  
20 substantially flat outer surface with said outer surfaces in substantially parallel respective position and said large and small flanges being in planar respective

position, said top and bottom ends each having a lateral slot for slidably receiving said raised spine members of said top and bottom rails therein, said lateral slot oriented substantially parallel to said small and large flange, each said flanged stud member further disposed between a top and bottom rail member, thereby  
5 providing a frame suitable for the reception of one or more rigid, self-supporting panels.

2. The improved wall construction as set forth in Claim 1 further comprising:

a first panel positioned adjacent to said large flange on a first flanged stud  
10 member such that inner face of said first panel is in contact with outer surface of said large flange with said front edge of first panel in substantially parallel alignment with said first flanged stud member and inner face of said first panel partially covers outer surface of said large flange, said first panel further being connected to said first flanged stud member by means of a plurality of penetrating  
15 connectors positioned through said large flange and terminating within said first panel;

a second panel positioned with inner face adjacent to said outer surface of spine channel on first flanged stud member such that said front edge of second panel is in substantially parallel alignment with said first flanged stud member and  
20 inner face of said second panel covers a portion of the outer surface of said spine channel, said second panel further being connected to said first flanged stud

member by means of a plurality of penetrating connectors positioned through said spine channel and terminating within said second panel, said second panel further having a plurality of symmetric recesses centered along said front edge, said recesses each being furnished with a symmetric connector inserted therein such that one-half of each symmetric connector extends outward from said front edge;

a third panel positioned with rear edge in abutted relation to front edge of said first panel and inner face adjacent to outer surface of both large and small flange of said first flanged stud member, said third panel further being connected to said first flanged stud member by means of a plurality of penetrating connectors positioned through said small flange and terminating within said third panel; and

a fourth panel positioned with inner face adjacent to said outer surface of spine channel of said first flanged stud member, said fourth panel further having a plurality of symmetric recesses centered along said rear edge, said recesses positioned to receive protruding portions of symmetric connectors located along front edge of said second panel therein as rear edge of said fourth panel is placed in abutted relation to front edge of said second panel.

3. The improved wall construction of claim 1 wherein each end of said large and small flange of each flanged stud member is tapered with each said taper beginning nearest said spine member and increasing as a function of distance from said spine member.

4. The improved wall construction of claim 1 wherein each said lateral slot includes an adjacent tab with each said tab positioned to lie adjacent to a said raised spine member slidably received within said lateral slot.
- 5
5. The improved wall construction of claim 4 wherein each said flanged stud is attached to said top and bottom rails by means of a penetrating fastener positioned through said tab and terminating in said raised spine member.
- 10
6. The improved wall construction of claim 5, wherein said penetrating fastener includes a screw, nail, bolt, rivet, brad, tack, or staple.
7. The improved wall construction of claim 1 wherein each spine channel includes a plurality of horizontal openings, said openings arranged in opposed pairs with each pair positioned normal to a horizontal lateral axis and shaped to provide for passing of wires, cables and the like there through.
- 15
8. The improved wall construction of claim 1 wherein each said lateral slot is selected from the group of a square slot, a rectangular slot, a triangular slot, a semicircular slot, and a semi-elliptical slot.
- 20

9. The improved wall construction of claim 2 wherein said penetrating connector is selected from the group of nails, brads, tacks, screws, lag screws, rivets, bolts, lag bolts, machine bolts, carriage bolts, stove bolts, toggle bolts, anchor bolts, staples and rivets.
10. The improved wall construction of claim 2 wherein said symmetric recesses are provided with an adhesive placed therein.
11. The improved wall construction of claim 10 wherein said adhesive is comprised of polymer-based material.
12. The improved wall construction of claim 10 wherein said adhesive contains petroleum distillates.
13. The improved wall construction of claim 1 wherein said flanged stud members are made from a metal or metal alloy.
14. The improved wall construction of claim 1 wherein said flanged stud members are made from a thermosetting polymer-based material.

15. The improved wall construction of claim 2 wherein said flanged stud members are made from a thermoplastic polymer-based material.

5

16. An improved method for constructing a wall including a plurality of rigid, self-supporting panels to divide or partition interior building space, said panels having a substantially rectangular shape with an inner and an outer face and a top edge, a bottom edge, a front edge and a rear edge, said front and rear edges having along a centerline a plurality of symmetric recesses for accepting a symmetric connector insert therein, said method comprising the steps of:

attaching a plurality of top rail members to a ceiling along the top centerline of a wall, said top rail members each having a substantially flat elongated rectangular shape with a first and second end and having a raised spine member spanning from first to second end;

attaching a plurality of bottom rail members to a floor along the bottom centerline of a wall, said bottom rail members each having a substantially flat elongated rectangular shape with a first and second end and having a raised spine member spanning from first to second end; and

placing a plurality of vertically oriented flanged stud members between said top and bottom rail members such that said stud members are slidably

retained between said rail members providing for lateral movement along the wall line, said flanged stud members each having a top and bottom end and a substantially hat-shaped cross section that includes a large flange and a small flange joined together by a spine channel located there between, said large flange, small flange, and spine channel each having a substantially flat outer surface with said outer surfaces in substantially parallel respective position and said large and small flanges being in planar respective position, said top and bottom ends each having a lateral slot for slidably receiving said raised spine member of said top and bottom rails therein, said lateral slot oriented substantially parallel to said small and large flange and having a tab adjacent thereto, thereby producing a frame suitable for attachment of one or more rigid, self-supporting panels.

17. The method for constructing a wall as set forth in Claim 16, further comprising the steps of:

placing a first panel adjacent to a first flanged stud member such that front edge of first panel is in substantially parallel position relative to said first hat channel and inner face of said first panel is in contact with and covers a portion of the outer surface of said large flange;

attaching said first panel to said first flanged stud member by means of a plurality of penetrating connectors placed through said large flange and terminating in said first panel;

placing a second panel adjacent to said first flanged stud member that front edge of second panel is in substantially parallel position relative to said first flanged stud member and inner face of said second panel is in contact with and covers a portion of the outer surface of said spine channel;

5

attaching said second panel to said first flanged stud member by means of a plurality of penetrating connectors placed through said spine channel and terminating in said second panel;

inserting symmetric connectors into each of a plurality of recesses located along front edge of said second panel such that substantially one half of each connector protrudes beyond said front edge of said second panel;

10

placing a third panel adjacent to said first flanged stud member such that rear edge of said third panel is in abutted contact with front edge of said first panel and inner face of third panel is in contact with remaining exposed outer surface of said large flange and covers the outer surface of said small flange; sliding a second flanged stud member into position so that third panel partially covers the outer surface of said large flange;

15

attaching said third panel to said first flanged stud by means of a plurality penetrating connectors placed through said small flange and terminating in said third panel;

20



attaching said third panel to said second flanged stud by means of a plurality of penetrating connectors placed through said large flange and terminating in said third panel;

5 placing rear edge of a fourth panel in abutted contact with front edge of said second panel such that exposed portions of symmetric connectors located along front edge of second panel are fully received into adjacent recesses located in said rear edge of said fourth panel and further positioning said fourth panel adjacent to said flanged stud member such that inner face of said fourth straw panel covers a portion of the outer surface of said spine channel; and

10 attaching said fourth panel to said second flanged stud member by means of a plurality of penetrating connectors placed through said spine channel and terminating in said fourth panel.

18. The improved method for constructing a wall of claim 16, further comprising the  
15 step of providing said symmetric recesses with adhesive prior to inserting symmetric connectors therein.

19. The improved method of constructing a wall of claim 18, further comprising the  
20 step of securing each said flanged stud member in place by inserting a penetrating connector through each said tab and terminating said penetrating connector in said spine member of said top or bottom rail member.